

SEQUENCE LISTING

<110> Broekaert, Willem
Francois, Isabelle
Evans, Ian
De Bolle, Miguel
Ray, John

<120> Genetic Method For The Expression of Polyproteins in Plants

<130> PPD50348/UST

<140>

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<150> GB 9818001.1

<151> 1998-08-18

<150> GB 9826753.7

<151> 1998-12-14

<150> PCT/GB99/02716

<151> 1999-08-17

<160> 81

<170> PatentIn Ver. 2.1

<210> 1

<211> 446

<212> DNA

<213> Dahlia merckii

<400> 1

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ttttatgtgt tctgacaagt tgcaaatatt gagtagatat cgcattccgtt agtggagAAC 180
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accaatgtaa atcatgggag ggtgcggccc atggagcgtg tcatgtgcgt aacgggaaac 300
acatgtgttt ctgttacttc aattgtaaaa aagccgaaaa gcttgctcaa gacaaactta 360
aagccgaaca actcgtctaa gacaaactta atgcccaaaa gcttgaccgt gatgccaaga 420
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<210> 2

<211> 118

<212> PRT

<213> Dahlia merckii

<400> 2

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Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
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Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
      20              25              30
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```
Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
      35              40              45
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Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
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Val Val Pro Asn Val Glu His Pro
35 40

<210> 6
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker
propeptide

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1 5 10 15
Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys
20 25 30

Val Val Pro Asn Val Glu His Pro Ile Gly Lys Arg
35 40

<210> 7
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker
propeptide

<400> 7
Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr
1 5 10 15
Ile Gly Lys Arg
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<210> 8
<211> 31
<212> PRT
<213> Amaranthus caudatus

<400> 8
Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr
1 5 10 15
Ala Lys Asn Pro Thr Asp Ala Lys Leu Ala Gly Ala Gly Ser Pro
20 25 30

<210> 9
<211> 522

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
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<220>

<221> CDS

<222> (76)..(513)

<400> 9

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          Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
          1              5              10

ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
          15              20              25

gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac 207
Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
          30              35              40

acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255
Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
          45              50              55              60

gga gcg tgt cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc 303
Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
          65              70              75

aat tgt tcc aac gct gct gac gag gtg gct acc cca gag gac gtg gag 351
Asn Cys Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu
          80              85              90

cca gga cag aag ttg tgc caa agg cca agt ggg aca tgg tca gga gtc 399
Pro Gly Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val
          95              100              105

tgt gga aac aat aac gca tgc aag aat cag tgc att aga ctt gag aaa 447
Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys
          110              115              120

gca cga cat gga tct tgc aac tat gtc ttc cca gct cac aag tgt atc 495
Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile
          125              130              135              140

tgc tac ttt cct tgt taa taggagctc 522
Cys Tyr Phe Pro Cys
          145
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<210> 10

<211> 145

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 10

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 1           5           10           15
Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
           20           25           30
Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
           35           40           45
Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
           50           55           60
Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
           65           70           75           80
Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly Gln Lys
           85           90           95
Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val Cys Gly Asn Asn
           100          105          110
Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly
           115          120          125
Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro
           130          135          140
Cys
145

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<210> 11

<211> 534

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<220>

<221> CDS

<222> (76)..(525)

<400> 11

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           Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
           1           5           10
ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
           15           20           25
gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac 207

```

Glu	Leu	Cys	Glu	Lys	Ala	Ser	Lys	Thr	Trp	Ser	Gly	Asn	Cys	Gly	Asn		
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Thr	Gly	His	Cys	Asp	Asn	Gln	Cys	Lys	Ser	Trp	Glu	Gly	Ala	Ala	His		
45					50					55					60		
gga	gcg	tgt	cat	gtg	cgt	aac	ggg	aaa	cac	atg	tgt	ttc	tgt	tac	ttc	303	
Gly	Ala	Cys	His	Val	Arg	Asn	Gly	Lys	His	Met	Cys	Phe	Cys	Tyr	Phe		
				65					70					75			
aat	tgt	aaa	aaa	gcc	gaa	aag	ctt	gct	caa	gac	aaa	ctt	aaa	gcc	gaa	351	
Asn	Cys	Lys	Lys	Ala	Glu	Lys	Leu	Ala	Gln	Asp	Lys	Leu	Lys	Ala	Glu		
			80					85					90				
caa	ctc	atc	gga	aag	agg	cag	aag	ttg	tgc	caa	agg	cca	agt	ggg	aca	399	
Gln	Leu	Ile	Gly	Lys	Arg	Gln	Lys	Leu	Cys	Gln	Arg	Pro	Ser	Gly	Thr		
		95					100					105					
tgg	tca	gga	gtc	tgt	gga	aac	aat	aac	gca	tgc	aag	aat	cag	tgc	att	447	
Trp	Ser	Gly	Val	Cys	Gly	Asn	Asn	Asn	Ala	Cys	Lys	Asn	Gln	Cys	Ile		
	110					115					120						
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Arg	Leu	Glu	Lys	Ala	Arg	His	Gly	Ser	Cys	Asn	Tyr	Val	Phe	Pro	Ala		
125					130					135					140		
cac	aag	tgt	atc	tgc	tac	ttt	cct	tgt	taa	taggagctc						534	
His	Lys	Cys	Ile	Cys	Tyr	Phe	Pro	Cys									
				145													

<210> 12

<211> 149

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 12

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Val	Leu	Ala	Ile	Ser	Asp	Ile	Ala	Ser	Val	Ser	Gly	Glu	Leu	Cys	Glu
		20						25					30		

Lys	Ala	Ser	Lys	Thr	Trp	Ser	Gly	Asn	Cys	Gly	Asn	Thr	Gly	His	Cys
	35						40					45			

Asp	Asn	Gln	Cys	Lys	Ser	Trp	Glu	Gly	Ala	Ala	His	Gly	Ala	Cys	His
	50					55					60				

Val	Arg	Asn	Gly	Lys	His	Met	Cys	Phe	Cys	Tyr	Phe	Asn	Cys	Lys	Lys
65					70					75					80

Ala	Glu	Lys	Leu	Ala	Gln	Asp	Lys	Leu	Lys	Ala	Glu	Gln	Leu	Ile	Gly
			85						90					95	

Lys	Arg	Gln	Lys	Leu	Cys	Gln	Arg	Pro	Ser	Gly	Thr	Trp	Ser	Gly	Val
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

100	105	110
Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys		
115	120	125
Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile		
130	135	140
Cys Tyr Phe Pro Cys		
145		

<210> 13
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Oligonucleotide

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 <223> n is any residue

<400> 13
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24

<210> 14
 <211> 8
 <212> PRT
 <213> Dahlia merckii

<400> 14
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<210> 15
 <211> 606
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
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<220>
 <221> CDS
 <222> (76)..(597)

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 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
 1 5 10

ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
 Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
 15 20 25

gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac 207
 Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
 30 35 40

acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255
 Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
 45 50 55 60

gga gcg tgt cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc 303
 Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
 65 70 75

aat tgt aaa aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa 351
 Asn Cys Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu
 80 85 90

caa ctc gct caa gac aaa ctt aat gcc caa aag ctt gac cgt gat gcc 399
 Gln Leu Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala
 95 100 105

aag aaa gtg gtt cca aac gtt gaa cat ccg atc gga aag agg cag aag 447
 Lys Lys Val Val Pro Asn Val Glu His Pro Ile Gly Lys Arg Gln Lys
 110 115 120

ttg tgc caa agg cca agt ggg aca tgg tca gga gtc tgt gga aac aat 495
 Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val Cys Gly Asn Asn
 125 130 135 140

aac gca tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga 543
 Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly
 145 150 155

tct tgc aac tat gtc ttc cca gct cac aag tgt atc tgc tac ttt cct 591
 Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro
 160 165 170

tgt taa taggagctc
Cys

606

<210> 16
<211> 173
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<400> 16
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1 5 10 15
Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
20 25 30
Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
35 40 45
Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
50 55 60
Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys
65 70 75 80
Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala Gln
85 90 95
Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val Val
100 105 110
Pro Asn Val Glu His Pro Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg
115 120 125
Pro Ser Gly Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
130 135 140
Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
145 150 155 160
Val Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
165 170

<210> 17
<211> 534
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<220>
<221> CDS
<222> (76)..(525)

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atttacaatt acacc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt 111
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
1 5 10

ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
15 20 25

gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac 207
Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
30 35 40

acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255
Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
45 50 55 60

gga gcg tgt cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc 303
Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
65 70 75

aat tgt gcc agt act act gtg gat cac caa gct gat gtt gct gcc acc 351
Asn Cys Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr
80 85 90

aaa act atc gga aag agg cag aag ttg tgc caa agg cca agt ggg aca 399
Lys Thr Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr
95 100 105

tgg tca gga gtc tgt gga aac aat aac gca tgc aag aat cag tgc att 447
Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile
110 115 120

aga ctt gag aaa gca cga cat gga tct tgc aac tat gtc ttc cca gct 495
Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala
125 130 135 140

cac aag tgt atc tgc tac ttt cct tgt taa taggagctc 534
His Lys Cys Ile Cys Tyr Phe Pro Cys
145

<210> 18

<211> 149

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 18

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
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Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
20 25 30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Ser
 65 70 75 80
 Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr Ile Gly
 85 90 95
 Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val
 100 105 110
 Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys
 115 120 125
 Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile
 130 135 140
 Cys Tyr Phe Pro Cys
 145

<210> 19
 <211> 316
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
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<220>
 <221> CDS
 <222> (76)..(312)

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 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
 1 5 10

 ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
 Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
 15 20 25

 gaa cta tgc gag aaa gct agc aag acg tgg tgc ggc aac tgt ggc aac 207
 Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
 30 35 40

 acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255
 Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
 45 50 55 60

 gga gcg tgt cat gtg cgt aat ggg aaa cac atg tgt ttc tgt tac ttc 303
 Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
 65 70 75

aat tgt tga gctc
Asn Cys

316

<210> 20
<211> 78
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<400> 20
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1 5 10 15
Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
20 25 30
Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
35 40 45
Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
50 55 60
Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys
65 70 75

<210> 21
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker
peptide

<400> 21
Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu
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<210> 22
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker
peptide

<400> 22
Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp
1 5 10

<210> 23
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker
peptide

<400> 23
Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu
1 5 10

<210> 24
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker
peptide

<400> 24
Ala Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu
1 5 10 15

Leu Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp
20 25

<210> 25
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker
propeptide

<400> 25
Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu
1 5 10 15

Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg
20 25

<210> 26
<211> 52
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker
propeptide

<400> 26

Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu
1 5 10 15

Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys
20 25 30

Val Val Pro Asn Val Glu His Pro Ile Gly Lys Arg Ile Gly Lys Arg
35 40 45

Ile Gly Lys Arg
50

<210> 27

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Linker
propeptide

<400> 27

Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr
1 5 10 15

Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg
20 25

<210> 28

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Linker
propeptide

<400> 28

Ser Asn Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu
1 5 10 15

Leu Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro
20 25

<210> 29

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Linker peptide

<400> 29

Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly

1

5

10

15

<210> 30
 <211> 446
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
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<220>
 <221> CDS
 <222> (3) .. (437)

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 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
 1 5 10 15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95
 Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
 20 25 30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat 143
 Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
 35 40 45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191
 Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
 50 55 60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt aac 239
 His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Asn
 65 70 75

gcg gcc gac gag gtg gct acc cca gag gac gtg gaa cct ggt cag aag 287
 Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly Gln Lys
 80 85 90 95

ttg tgc caa agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat 335
 Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn
 100 105 110

aac gca tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga 383
 Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly
 115 120 125

tct tgc aac tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct 431
 Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro
 130 135 140

tgt taa taggagctc 446
 Cys

<210> 31
 <211> 144

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<400> 31
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
1 5 10 15
Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
20 25 30
Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
35 40 45
Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
50 55 60
Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Asn Ala
65 70 75 80
Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly Gln Lys Leu
85 90 95
Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn
100 105 110
Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser
115 120 125
Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
130 135 140

<210> 32
<211> 443
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<220>
<221> CDS
<222> (3)..(434)

<400> 32
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
1 5 10 15
ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
20 25 30
gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat 143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His

	35	40	45	
tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt				191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys	50	55	60	
cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc				239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser	65	70	75	
aac gcg gcc gac gag gtg gct acc cca gag gac gtg gaa cag aag ttg				287
Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Gln Lys Leu	80	85	90	95
tgc caa agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac				335
Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn	100	105	110	
gca tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct				383
Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser	115	120	125	
tgc aac tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt				431
Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys	130	135	140	
taa taggagctc				443

<210> 33

<211> 143

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 33

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe	1	5	10	15
Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu	20	25	30	
Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys	35	40	45	
Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His	50	55	60	
Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn	65	70	75	80
Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Gln Lys Leu Cys	85	90	95	
Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala	100	105	110	

Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys
 115 120 125

Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 130 135 140

<210> 34

<211> 437

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 sequence

<220>

<221> CDS

<222> (3) .. (428)

<400> 34

cc atg gtg aat cgg tgc gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
 1 5 10 15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95
 Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
 20 25 30

gag aaa gct agc aag acg tgg tgc ggc aac tgt ggc aac acg gga cat 143
 Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
 35 40 45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191
 Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
 50 55 60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc 239
 His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser
 65 70 75

aac gcg gcc gac gag gtg gct acc cca gag gac cag aag ttg tgc caa 287
 Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Gln Lys Leu Cys Gln
 80 85 90 95

agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc 335
 Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys
 100 105 110

aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac 383
 Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
 115 120 125

tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa 428
 Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 130 135 140

taggagctc 437

<210> 35
 <211> 141
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 sequence

<400> 35

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
 65 70 75 80

Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Gln Lys Leu Cys Gln Arg
 85 90 95

Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
 100 105 110

Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
 115 120 125

Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 130 135 140

<210> 36

<211> 434

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 sequence

<220>

<221> CDS

<222> (3)..(425)

<400> 36

cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
 1 5 10 15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95
 Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
 20 25 30

gag aaa gct agc aag acg tgg tgc ggc aac tgt ggc aac acg gga cat 143
 Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
 35 40 45
 tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191
 Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
 50 55 60
 cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc 239
 His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser
 65 70 75
 aac gcg gcc gac gag gtg gct acc cca gag cag aag ttg tgc caa agg 287
 Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Gln Lys Leu Cys Gln Arg
 80 85 90 95
 cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc aag 335
 Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
 100 105 110
 aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac tat 383
 Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
 115 120 125
 cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa taggagctc 434
 Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 130 135 140

<210> 37
 <211> 140
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 37
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
 65 70 75 80
 Ala Ala Asp Glu Val Ala Thr Pro Glu Gln Lys Leu Cys Gln Arg Pro
 85 90 95
 Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn
 100 105 110
 Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Arg

115

120

125

Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 130 135 140

<210> 38

<211> 485

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<220>

<221> CDS

<222> (3)..(476)

<400> 38

cc atg gtg aat cgg tgc gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu

1

5

10

15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95

Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys

20

25

30

gag aaa gct agc aag acg tgg tgc ggc aac tgt ggc aac acg gga cat 143

Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His

35

40

45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191

Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys

50

55

60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt gct 239

His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala

65

70

75

aac gct gag gaa gct gct gct gct att cct gaa gct tct gaa gaa ctt 287

Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu

80

85

90

95

gct caa gaa gaa gct cct gtg tac agt gaa gat cag aag ttg tgc caa 335

Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln

100

105

110

agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc 383

Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys

115

120

125

aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac 431

Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn

130

135

140

tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa 476

Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys

145

150

155

<210> 39
 <211> 157
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 39
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Asn
 65 70 75 80
 Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala
 85 90 95
 Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln Arg
 100 105 110
 Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
 115 120 125
 Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
 130 135 140
 Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 145 150 155

<210> 40
 <211> 1093
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<220>
 <221> CDS
 <222> (3)..(1085)

<400> 40
 cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu

1	5	10	15	
ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc				95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys	20	25	30	
gag aaa gct agc aag acg tgg tgc ggc aac tgt ggc aac acg gga cat				143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His	35	40	45	
tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt				191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys	50	55	60	
cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aac tgc gct				239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala	65	70	75	
aac gct gag gaa gct gct gct gct att cct gaa gct tct gaa gaa ctt				287
Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu	80	85	90	95
gct caa gaa gaa gct cct gtg tac agt gaa gat cag aag ttg tgc caa				335
Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln	100	105	110	
agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc				383
Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys	115	120	125	
aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac				431
Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn	130	135	140	
tat cgt ttc cca gct cac aag tgt atc tgc tac ttc cct tgt gcg aat				479
Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys Ala Asn	145	150	155	
gct gaa gaa gct gct gct gct att cct gaa gct tct gaa gaa ctt gct				527
Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala	160	165	170	175
caa gaa gaa gca ccg gtt tac tct gaa gat gac gga gtg aag ctc tgc				575
Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Asp Gly Val Lys Leu Cys	180	185	190	
gac gtg cca tcc gga acc tgg tcc gga cac tgc ggt tcc tcc agc aag				623
Asp Val Pro Ser Gly Thr Trp Ser Gly His Cys Gly Ser Ser Ser Lys	195	200	205	
tgc agc caa caa tgc aag gac agg gag cac ttc gct tac gga gga gct				671
Cys Ser Gln Gln Cys Lys Asp Arg Glu His Phe Ala Tyr Gly Gly Ala	210	215	220	
tgc cac tac caa ttc cca tcc gtg aag tgc ttc tgc aag agg caa tgc				719
Cys His Tyr Gln Phe Pro Ser Val Lys Cys Phe Cys Lys Arg Gln Cys	225	230	235	
gct aac gct gag gaa gct gct gct gct att cct gaa gct tct gaa gaa				767
Ala Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu	240	245	250	255

ctt gct caa gaa gaa gct cct gtg tac agt gaa gat cag aac ata tgc 815
 Leu Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Asn Ile Cys
 260 265 270
 cca agg gtt aat cga att gtg aca ccc tgt gtg gcc tac gga ctc gga 863
 Pro Arg Val Asn Arg Ile Val Thr Pro Cys Val Ala Tyr Gly Leu Gly
 275 280 285
 agg gca cca atc gcc cca tgc tgc aga gcc ctg aac gat cta cgg ttt 911
 Arg Ala Pro Ile Ala Pro Cys Cys Arg Ala Leu Asn Asp Leu Arg Phe
 290 295 300
 gtg aat act aga aac cta cga cgt gct gca tgc cgc tgc ctc gta ggg 959
 Val Asn Thr Arg Asn Leu Arg Arg Ala Ala Cys Arg Cys Leu Val Gly
 305 310 315
 gta gtg aac cgg aac ccc ggt ctg aga cga aac cct aga ttt cag aac 1007
 Val Val Asn Arg Asn Pro Gly Leu Arg Arg Asn Pro Arg Phe Gln Asn
 320 325 330 335
 att cct cgt gat tgt cgc aac acc ttt gtt cgt ccc ttc tgg tgg cgt 1055
 Ile Pro Arg Asp Cys Arg Asn Thr Phe Val Arg Pro Phe Trp Trp Arg
 340 345 350
 cca aga att caa tgc ggc agg att aac taa tagagctc 1093
 Pro Arg Ile Gln Cys Gly Arg Ile Asn
 355 360

<210> 41
 <211> 360
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 41
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Asn
 65 70 75 80
 Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala
 85 90 95
 Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln Arg
 100 105 110

Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
 115 120 125
 Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
 130 135 140
 Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys Ala Asn Ala
 145 150 155 160
 Glu Glu Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala Gln
 165 170 175
 Glu Glu Ala Pro Val Tyr Ser Glu Asp Asp Gly Val Lys Leu Cys Asp
 180 185 190
 Val Pro Ser Gly Thr Trp Ser Gly His Cys Gly Ser Ser Ser Lys Cys
 195 200 205
 Ser Gln Gln Cys Lys Asp Arg Glu His Phe Ala Tyr Gly Gly Ala Cys
 210 215 220
 His Tyr Gln Phe Pro Ser Val Lys Cys Phe Cys Lys Arg Gln Cys Ala
 225 230 235 240
 Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu
 245 250 255
 Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Asn Ile Cys Pro
 260 265 270
 Arg Val Asn Arg Ile Val Thr Pro Cys Val Ala Tyr Gly Leu Gly Arg
 275 280 285
 Ala Pro Ile Ala Pro Cys Cys Arg Ala Leu Asn Asp Leu Arg Phe Val
 290 295 300
 Asn Thr Arg Asn Leu Arg Arg Ala Ala Cys Arg Cys Leu Val Gly Val
 305 310 315 320
 Val Asn Arg Asn Pro Gly Leu Arg Arg Asn Pro Arg Phe Gln Asn Ile
 325 330 335
 Pro Arg Asp Cys Arg Asn Thr Phe Val Arg Pro Phe Trp Trp Arg Pro
 340 345 350
 Arg Ile Gln Cys Gly Arg Ile Asn
 355 360

<210> 42
 <211> 485
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<220>
 <221> CDS

<222> (3) .. (476)

<400> 42

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cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt      47
  Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
    1             5             10             15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc      95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
          20             25             30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat      143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
          35             40             45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt      191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
          50             55             60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt aaa      239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys
          65             70             75

aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa caa ctc atc      287
Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ile
          80             85             90             95

gga aag agg atc gga aag agg atc gga aag agg cag aag ttg tgc caa      335
Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg Gln Lys Leu Cys Gln
          100            105            110

agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc      383
Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys
          115            120            125

aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac      431
Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
          130            135            140

tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa      476
Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
          145            150            155

taggagctc                                                                485
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<210> 43

<211> 157

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 43

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Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
  1             5             10             15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
          20             25             30
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Lys	Ala	Ser	Lys	Thr	Trp	Ser	Gly	Asn	Cys	Gly	Asn	Thr	Gly	His	Cys
		35					40				45				
Asp	Asn	Gln	Cys	Lys	Ser	Trp	Glu	Gly	Ala	Ala	His	Gly	Ala	Cys	His
		50				55				60					
Val	Arg	Asn	Gly	Lys	His	Met	Cys	Phe	Cys	Tyr	Phe	Asn	Cys	Lys	Lys
		65			70					75					80
Ala	Glu	Lys	Leu	Ala	Gln	Asp	Lys	Leu	Lys	Ala	Glu	Gln	Leu	Ile	Gly
				85					90					95	
Lys	Arg	Ile	Gly	Lys	Arg	Ile	Gly	Lys	Arg	Gln	Lys	Leu	Cys	Gln	Arg
		100						105					110		
Pro	Ser	Arg	Thr	Trp	Ser	Gly	Val	Cys	Gly	Asn	Asn	Asn	Ala	Cys	Lys
		115				120						125			
Asn	Gln	Cys	Ile	Arg	Leu	Glu	Lys	Ala	Arg	His	Gly	Ser	Cys	Asn	Tyr
		130				135				140					
Arg	Phe	Pro	Ala	His	Lys	Cys	Ile	Cys	Tyr	Phe	Pro	Cys			
145				150						155					

aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa caa ctc gct 287
 Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala
 80 85 90 95

 caa gac aaa ctt aat gcc caa aag ctt gac cgt gat gcc aag aaa gtg 335
 Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val
 100 105 110

 gtt cca aac gtt gaa cat ccg atc gga aag agg atc gga aag agg atc 383
 Val Pro Asn Val Glu His Pro Ile Gly Lys Arg Ile Gly Lys Arg Ile
 115 120 125

 gga aag agg cag aag ttg tgc caa agg cca agt cgt aca tgg tca gga 431
 Gly Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly
 130 135 140

 gtc tgt gga aac aat aac gca tgc aag aat cag tgc att aga ctt gag 479
 Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu
 145 150 155

 aaa gca cga cat gga tct tgc aac tat cgt ttc cca gct cac aag tgt 527
 Lys Ala Arg His Gly Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys
 160 165 170 175

 atc tgc tac ttt cct tgt taa taggagctc 557
 Ile Cys Tyr Phe Pro Cys
 180

<210> 45
 <211> 181
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 45
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15

 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30

 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45

 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60

 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys
 65 70 75 80

 Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala Gln
 85 90 95

 Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val Val
 100 105 110

 Pro Asn Val Glu His Pro Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly

115		120		125
Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val				
130		135		140
Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys				
145		150		155
Ala Arg His Gly Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile				
	165		170	175
Cys Tyr Phe Pro Cys				
	180			

<210> 46
 <211> 485
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<220>
 <221> CDS
 <222> (3) .. (476)

<400> 46	
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt	47
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu	
1 5 10 15	
ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc	95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys	
20 25 30	
gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat	143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His	
35 40 45	
tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt	191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys	
50 55 60	
cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt gcc	239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala	
65 70 75	
agt act act gtg gat cac caa gct gat gtt gct gcc acc aaa act atc	287
Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Thr Lys Thr Ile	
80 85 90 95	
gga aag agg atc gga aag agg atc gga aag agg cag aag ttg tgc caa	335
Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg Gln Lys Leu Cys Gln	
100 105 110	
agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc	383
Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys	
115 120 125	

aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac 431
 Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
 130 135 140

tat ctg ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa 476
 Tyr Leu Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 145 150 155

taggagctc 485

<210> 47
 <211> 157
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<400> 47
 Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1 5 10 15
 Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
 20 25 30
 Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
 35 40 45
 Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
 50 55 60
 Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Ser
 65 70 75 80
 Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr Ile Gly
 85 90 95
 Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg
 100 105 110
 Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
 115 120 125
 Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
 130 135 140
 Leu Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 145 150 155

<210> 48
 <211> 488
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic

sequence

<220>

<221> CDS

<222> (3) .. (479)

<400> 48

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cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt      47
  Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
    1             5             10             15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc      95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
          20             25             30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat     143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
          35             40             45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt     191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
          50             55             60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc     239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser
          65             70             75

aac gcg gcc gac gag gtg gct acc cag ctg ttg aat ttt gac ctt ctt     287
Asn Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu Leu
          80             85             90             95

aag ctt gcg gga gac gtc gag tcc aac cct ggg ccc cag aag ttg tgc     335
Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro Gln Lys Leu Cys
          100            105            110

caa agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca     383
Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala
          115            120            125

tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc     431
Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys
          130            135            140

aac tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa     479
Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
          145            150            155

taggagctc                                                                488

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<210> 49

<211> 158

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 49

Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe

1	5	10	15												
Val	Leu	Ala	Ile	Ser	Asp	Ile	Ala	Ser	Val	Ser	Gly	Glu	Leu	Cys	Glu
			20					25					30		
Lys	Ala	Ser	Lys	Thr	Trp	Ser	Gly	Asn	Cys	Gly	Asn	Thr	Gly	His	Cys
		35					40					45			
Asp	Asn	Gln	Cys	Lys	Ser	Trp	Glu	Gly	Ala	Ala	His	Gly	Ala	Cys	His
		50				55					60				
Val	Arg	Asn	Gly	Lys	His	Met	Cys	Phe	Cys	Tyr	Phe	Asn	Cys	Ser	Asn
65					70					75					80
Ala	Ala	Asp	Glu	Val	Ala	Thr	Gln	Leu	Leu	Asn	Phe	Asp	Leu	Leu	Lys
				85					90						95
Leu	Ala	Gly	Asp	Val	Glu	Ser	Asn	Pro	Gly	Pro	Gln	Lys	Leu	Cys	Gln
			100					105					110		
Arg	Pro	Ser	Arg	Thr	Trp	Ser	Gly	Val	Cys	Gly	Asn	Asn	Asn	Ala	Cys
		115					120					125			
Lys	Asn	Gln	Cys	Ile	Arg	Leu	Glu	Lys	Ala	Arg	His	Gly	Ser	Cys	Asn
	130					135					140				
Tyr	Arg	Phe	Pro	Ala	His	Lys	Cys	Ile	Cys	Tyr	Phe	Pro	Cys		
145					150					155					

<210> 50
 <211> 575
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 sequence

<220>
 <221> CDS
 <222> (3) .. (566)

<400> 50	
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt	47
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu	
1 5 10 15	
ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc	95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys	
20 25 30	
gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat	143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His	
35 40 45	
tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt	191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys	
50 55 60	

cat	gtg	cgt	aac	ggg	aaa	cac	atg	tgt	ttc	tgt	tac	ttc	aat	tgt	tcc	239
His	Val	Arg	Asn	Gly	Lys	His	Met	Cys	Phe	Cys	Tyr	Phe	Asn	Cys	Ser	
	65					70					75					
aac	gcg	gcc	gac	gag	gtg	gct	acc	cag	ctg	ttg	aat	ttt	gac	ctt	ctt	287
Asn	Ala	Ala	Asp	Glu	Val	Ala	Thr	Gln	Leu	Leu	Asn	Phe	Asp	Leu	Leu	
	80				85				90						95	
aag	ctt	gcg	gga	gac	gtc	gag	tcc	aac	cct	ggg	ccc	atg	gct	aag	ttt	335
Lys	Leu	Ala	Gly	Asp	Val	Glu	Ser	Asn	Pro	Gly	Pro	Met	Ala	Lys	Phe	
			100					105						110		
gcg	tcc	atc	atc	gca	ctt	ctt	ttt	gct	gct	ctt	gtt	ctt	ttt	gct	gct	383
Ala	Ser	Ile	Ile	Ala	Leu	Leu	Phe	Ala	Ala	Leu	Val	Leu	Phe	Ala	Ala	
			115				120						125			
ttc	gaa	gca	cca	aca	atg	gtg	gaa	gca	cag	aag	ttg	tgc	caa	agg	cca	431
Phe	Glu	Ala	Pro	Thr	Met	Val	Glu	Ala	Gln	Lys	Leu	Cys	Gln	Arg	Pro	
	130					135						140				
agt	cgt	aca	tgg	tca	gga	gtc	tgt	gga	aac	aat	aac	gca	tgc	aag	aat	479
Ser	Arg	Thr	Trp	Ser	Gly	Val	Cys	Gly	Asn	Asn	Asn	Ala	Cys	Lys	Asn	
	145				150						155					
cag	tgc	att	aga	ctt	gag	aaa	gca	cga	cat	gga	tct	tgc	aac	tat	cgt	527
Gln	Cys	Ile	Arg	Leu	Glu	Lys	Ala	Arg	His	Gly	Ser	Cys	Asn	Tyr	Arg	
	160				165				170						175	
ttc	cca	gct	cac	aag	tgt	atc	tgc	tac	ttt	cct	tgt	taa	taggagctc			575
Phe	Pro	Ala	His	Lys	Cys	Ile	Cys	Tyr	Phe	Pro	Cys					
			180					185								

<210> 51

<211> 187

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 51

Met	Val	Asn	Arg	Ser	Val	Ala	Phe	Ser	Ala	Phe	Val	Leu	Ile	Leu	Phe
1				5					10					15	

Val	Leu	Ala	Ile	Ser	Asp	Ile	Ala	Ser	Val	Ser	Gly	Glu	Leu	Cys	Glu
			20					25					30		

Lys	Ala	Ser	Lys	Thr	Trp	Ser	Gly	Asn	Cys	Gly	Asn	Thr	Gly	His	Cys
		35					40					45			

Asp	Asn	Gln	Cys	Lys	Ser	Trp	Glu	Gly	Ala	Ala	His	Gly	Ala	Cys	His
	50					55					60				

Val	Arg	Asn	Gly	Lys	His	Met	Cys	Phe	Cys	Tyr	Phe	Asn	Cys	Ser	Asn
	65				70					75					80

Ala	Ala	Asp	Glu	Val	Ala	Thr	Gln	Leu	Leu	Asn	Phe	Asp	Leu	Leu	Lys
				85				90						95	

Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro Met Ala Lys Phe Ala
 100 105 110
 Ser Ile Ile Ala Leu Leu Phe Ala Ala Leu Val Leu Phe Ala Ala Phe
 115 120 125
 Glu Ala Pro Thr Met Val Glu Ala Gln Lys Leu Cys Gln Arg Pro Ser
 130 135 140
 Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln
 145 150 155 160
 Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Arg Phe
 165 170 175
 Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
 180 185

<210> 52
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 Oligonucleotide

<220>
 <221> misc_feature
 <222> (9)
 <223> n is any residue

<220>
 <221> misc_feature
 <222> (12)
 <223> n is any residue

<220>
 <221> misc_feature
 <222> (15)
 <223> n is any residue

<400> 52
 cartttraant ancanaaaarc acat

24

<210> 53
 <211> 8
 <212> PRT
 <213> Dahlia merckii

<400> 53
 Met Cys Phe Cys Tyr Phe Asn Cys
 1 5

<210> 54
 <211> 20

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 54
aaacacatgt gtttcccatt 20

<210> 55
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 55
agcgtgtcat gtgcgtaat 19

<210> 56
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 56
taaagaaacc gaccctttca cgg 23

<210> 57
<211> 107
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 57
atgcatccat ggtgaatcgg tcggttgctg tctccgcgtt cgttctgata cttttcgtgc 60
tcgccatctc agatatcgca tccgttagtg gagaactatg cgagaaa 107

<210> 58
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 58
aaaccgaccg agctcacgga tgttcaacgt ttggaac 37

<210> 59
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 59
agcaagcttt tcgggagctc aacaattgaa gtaa

34

<210> 60
<211> 89
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 60
gcctttggca caacttctgt cctggctcca cgtcctctgg ggtagccacc tcgtcagcag 60
cgttgggaaca attgaagtaa cagaaacac 89

<210> 61
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 61
ttagagctcc tattaacaag gaaagtagc

29

<210> 62
<211> 55
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 62
gcctttggca caacttctgc ctctttccga tgagttgttc ggctttaagt ttgtc

55

<210> 63
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 63
gcctttggca caacttctgc ctctttccga tcggatgttc aacgtttgga acc

53

<210> 64
<211> 101
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 64
gcctttggca caacttctgc ctctttccga tagttttggt ggcagcaaca tcagcttggt 60
gatccacagt agtactggca caattgaagt aacagaaaca c 101

<210> 65
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<400> 65
Lys Asp Glu Leu
1

<210> 66
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<220>
<221> misc_feature
<222> (9)
<223> n is any residue

<220>
<221> misc_feature
<222> (12)
<223> n is any residue

<220>
<221> misc_feature
<222> (21)
<223> n is any residue

<400> 66
atggcsaanm rntcrgttgc ntt 23

<210> 67
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<400> 67
Ile Gly Lys Arg
1

<210> 68
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 68
aggaagttca ttccatttgg

20

<210> 69
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Determined
N-terminal sequence

<400> 69
Glu Leu Cys Glu Lys Ala Ser
1 5

<210> 70
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Determined
N-terminal sequence

<400> 70
Asp Val Glu Pro Gly Gln Lys
1 5

<210> 71
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Determined
N-terminal sequence

<400> 71
Leu Ile Gly Lys Arg Gln Lys
1 5

<210> 72
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Predicted
C-terminal sequence

<400> 72
Cys Tyr Phe Asn Cys Ser
1 5

<210> 73
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Predicted
C-terminal sequence

<400> 73
Ile Cys Tyr Phe Pro Cys
1 5

<210> 74
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Predicted
C-terminal sequence

<400> 74
Cys Tyr Phe Asn Pro Ser
1 5

<210> 75
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Predicted
C-terminal sequence

<400> 75
Cys Tyr Phe Asn Cys Lys
1 5

<210> 76
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Predicted
C-terminal sequence

<400> 76
Cys Tyr Phe Asn Cys Ala
1 5

<210> 77
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<400> 77
Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg
1 5 10

<210> 78
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<400> 78
Val Ser Gly Glu Leu Cys
1 5

<210> 79
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<400> 79

Phe Asn Cys Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val
1 5 10 15

Glu Pro Gly Gln Lys Leu
20

<210> 80

<211> 26

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 80

Phe Asn Cys Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala
1 5 10 15

Glu Gln Leu Ile Gly Lys Arg Gln Lys Leu
20 25

<210> 81

<211> 26

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
sequence

<400> 81

Phe Asn Cys Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala
1 5 10 15

Thr Lys Thr Ile Gly Lys Arg Gln Lys Leu
20 25